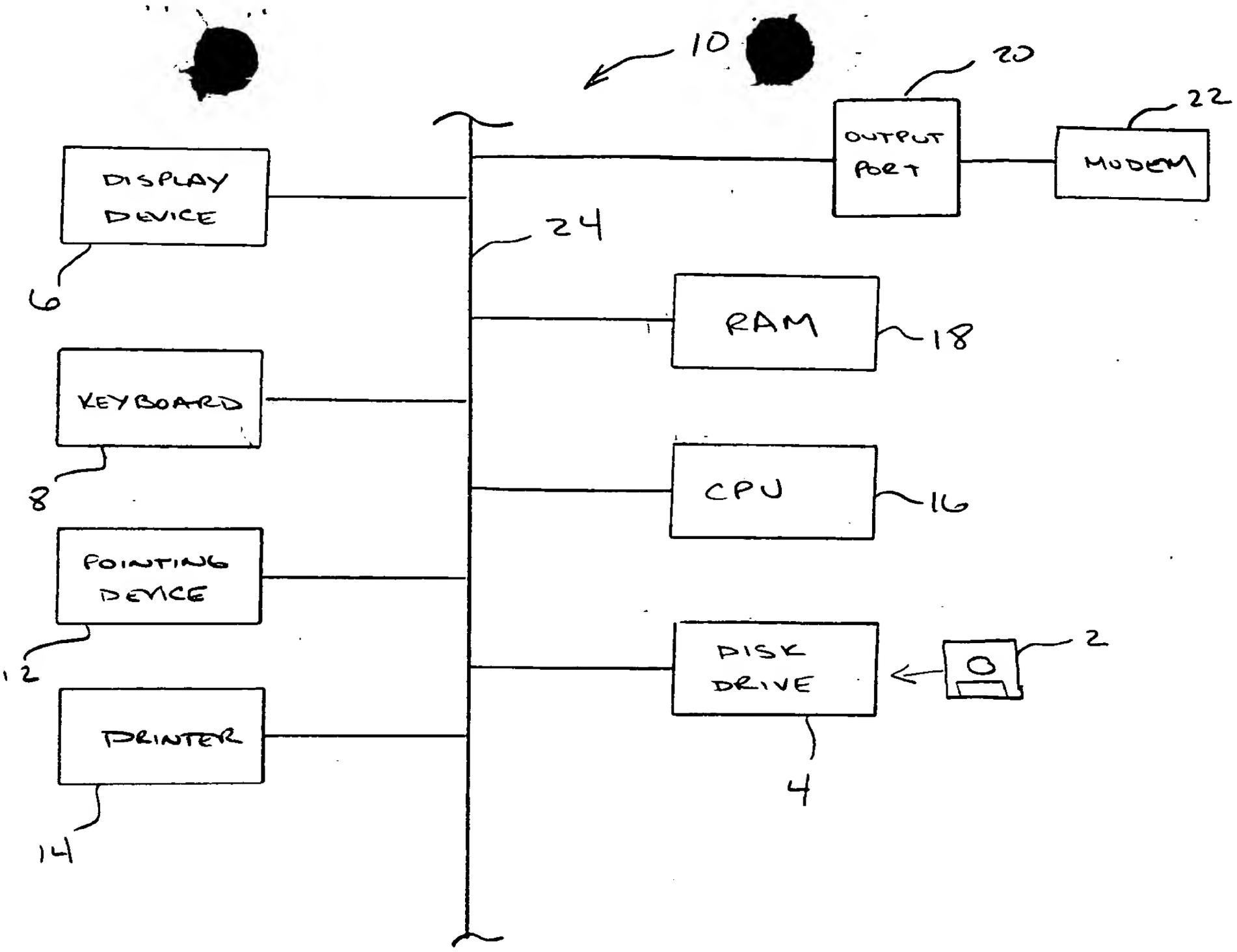


FIG. 1

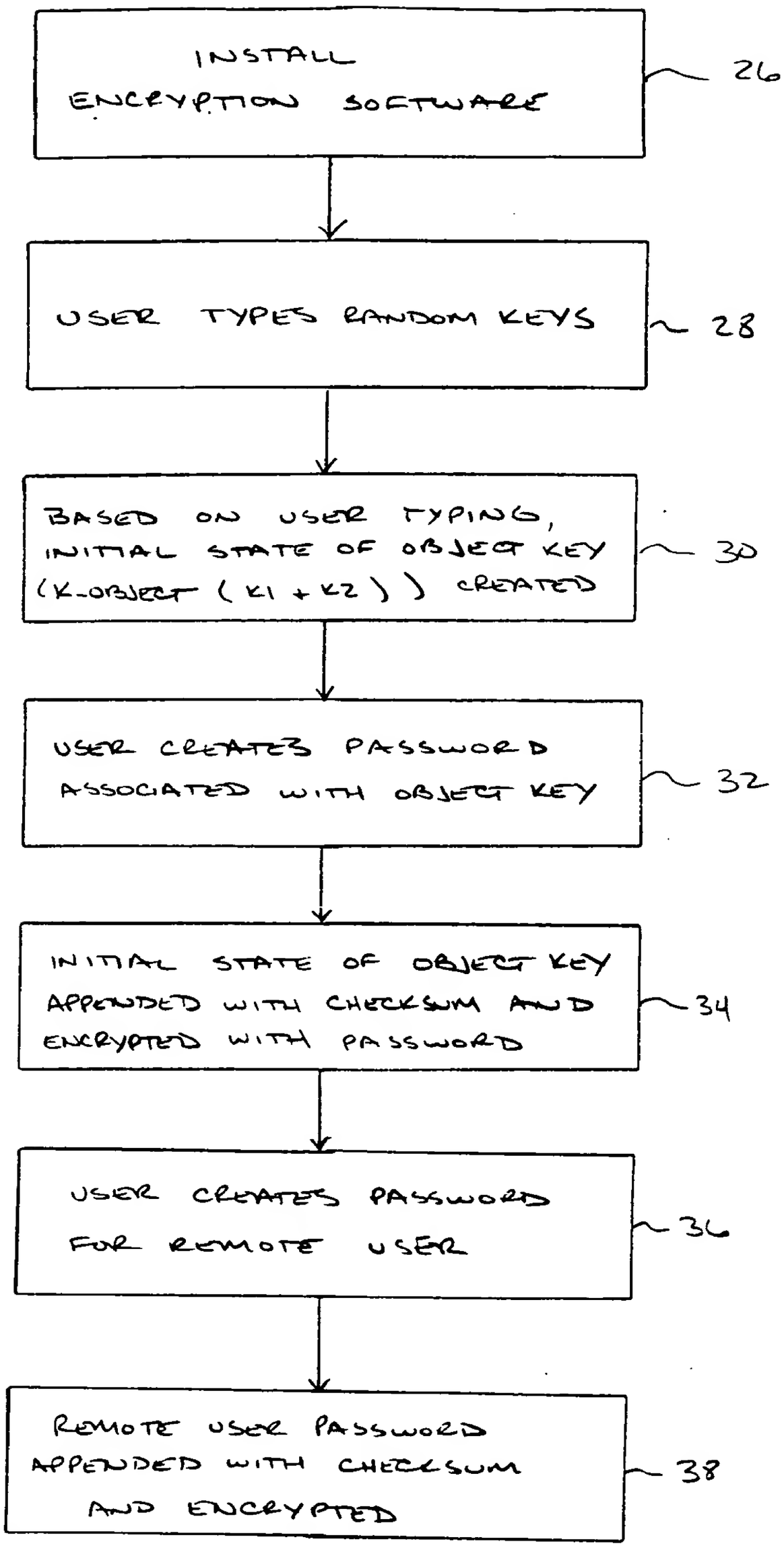

INSTALL ENCRYPTION SOFTWARE
26
USER TYPES RANDOM KEYS
28
BASED ON USER TYPING, INITIAL STATE OF OBJECT KEY (K-OBJECT (K1 + K2)) CREATED
30
USER CREATES PASSWORD ASSOCIATED WITH OBJECT KEY
32
INITIAL STATE OF OBJECT KEY APPENDED WITH CHECKSUM AND ENCRYPTED WITH PASSWORD
34
USER CREATES PASSWORD FOR REMOTE USER
36
REMOTE USER PASSWORD APPENDED WITH CHECKSUM AND ENCRYPTED
38

FIG. 2

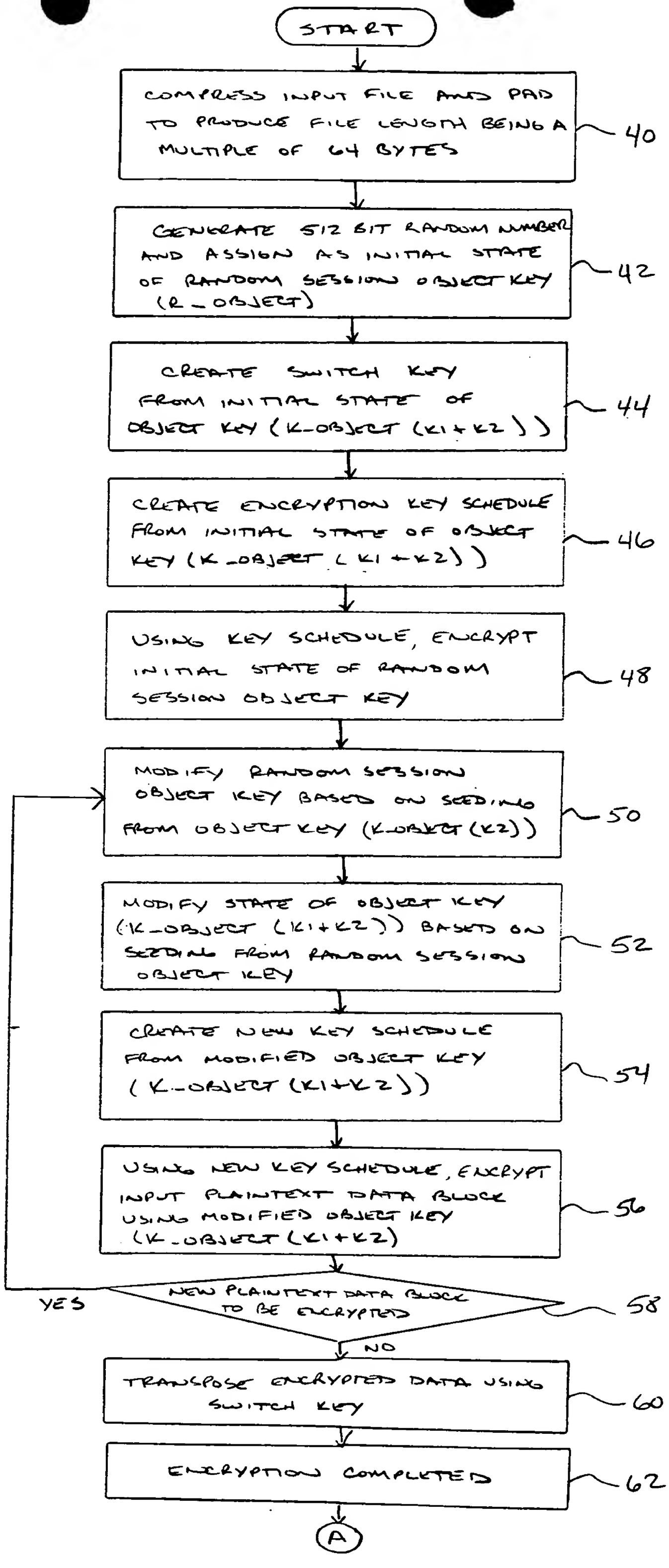


FIG. 3

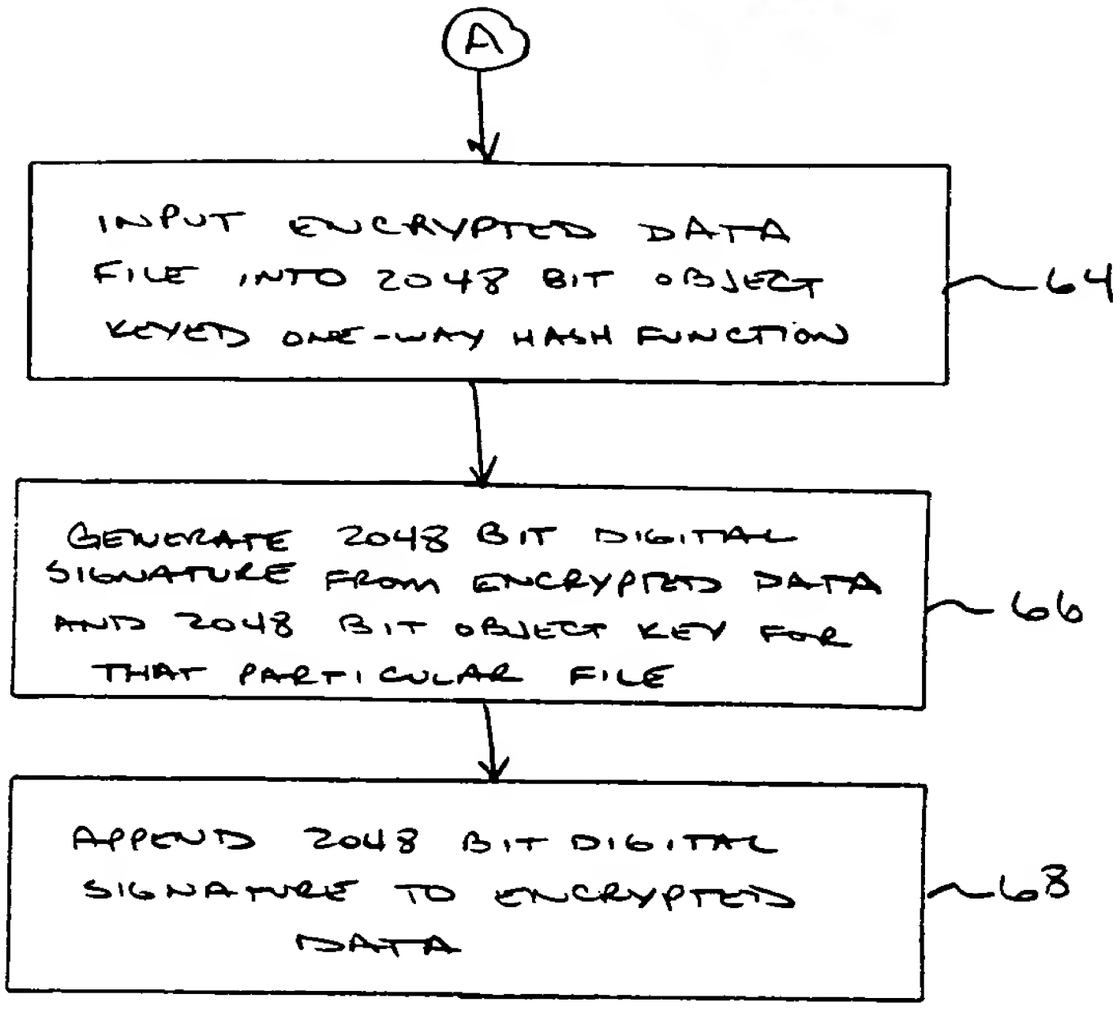


FIG. 4

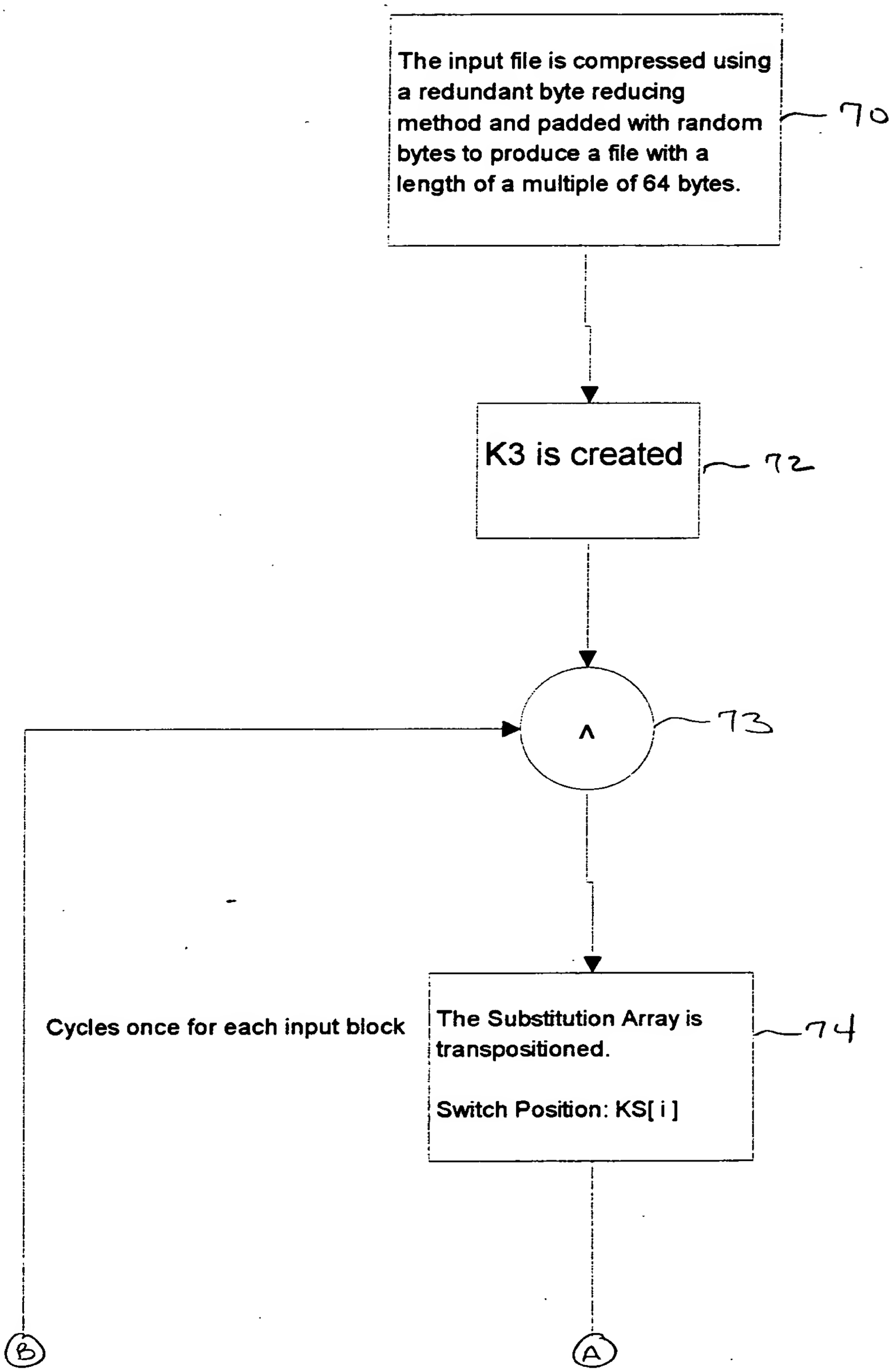

The input file is compressed using a redundant byte reducing method and padded with random bytes to produce a file with a length of a multiple of 64 bytes.
70
K3 is created
72
^
73
Cycles once for each input block
The Substitution Array is transpositioned.
Switch Position: KS[i]
74
B
A

FIG. 5

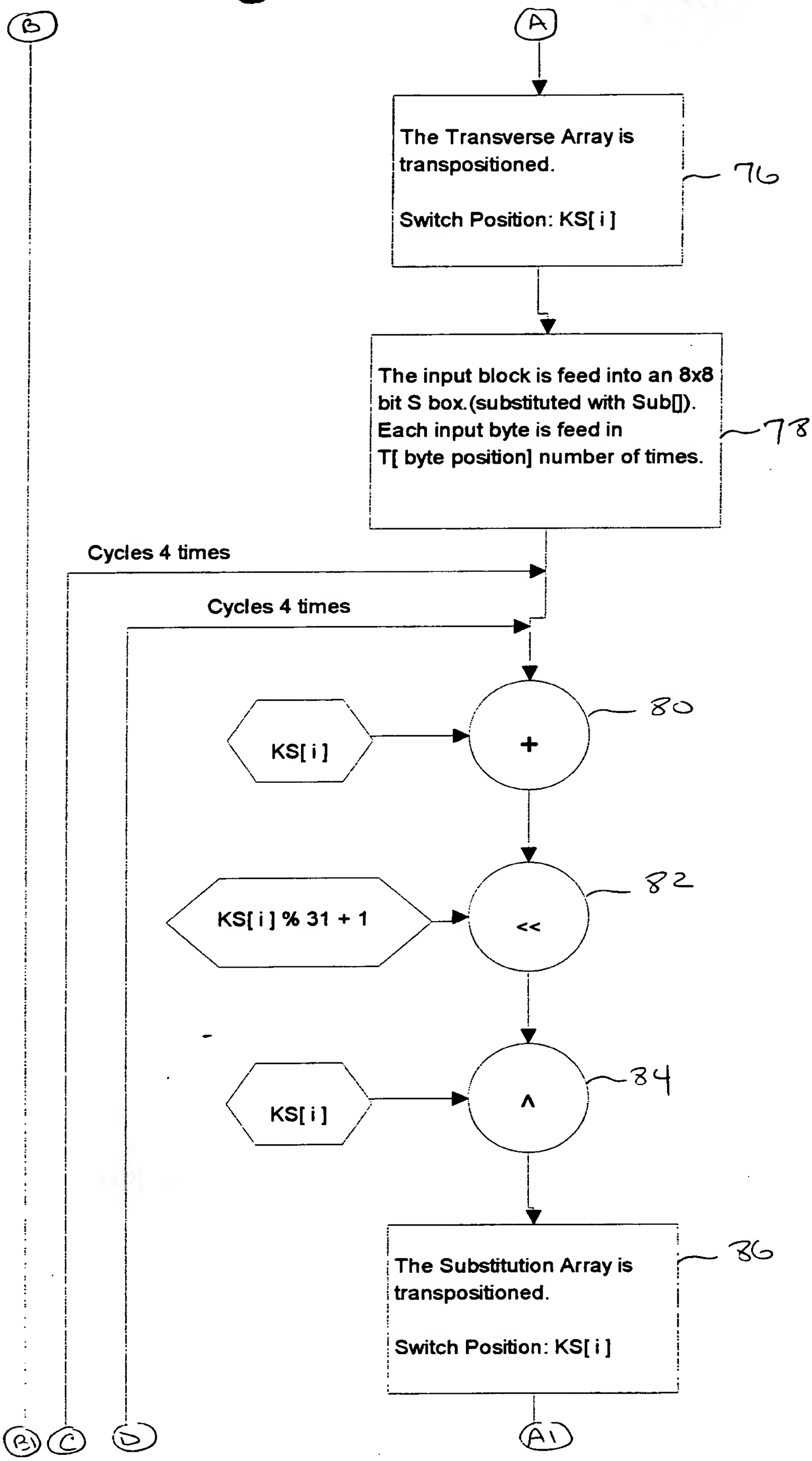


FIG. 5 (CONT'D)

B1 C D

A1

The Transverse Array is transpositioned.

Switch Position: KS[i]

88

Each byte is feed into an 8x8 bit S box.(substituted with Sub[])
T[byte position] number of times.

90

Each byte is transpositioned.

Switch Position: KS[i]

92

Each bit is transpositioned.

Switch Position: KS[i] << 8 | KS[i]

94

F1( )
(SEE FIG. 7)

96

A2

FIG. 5 (CONT'D)

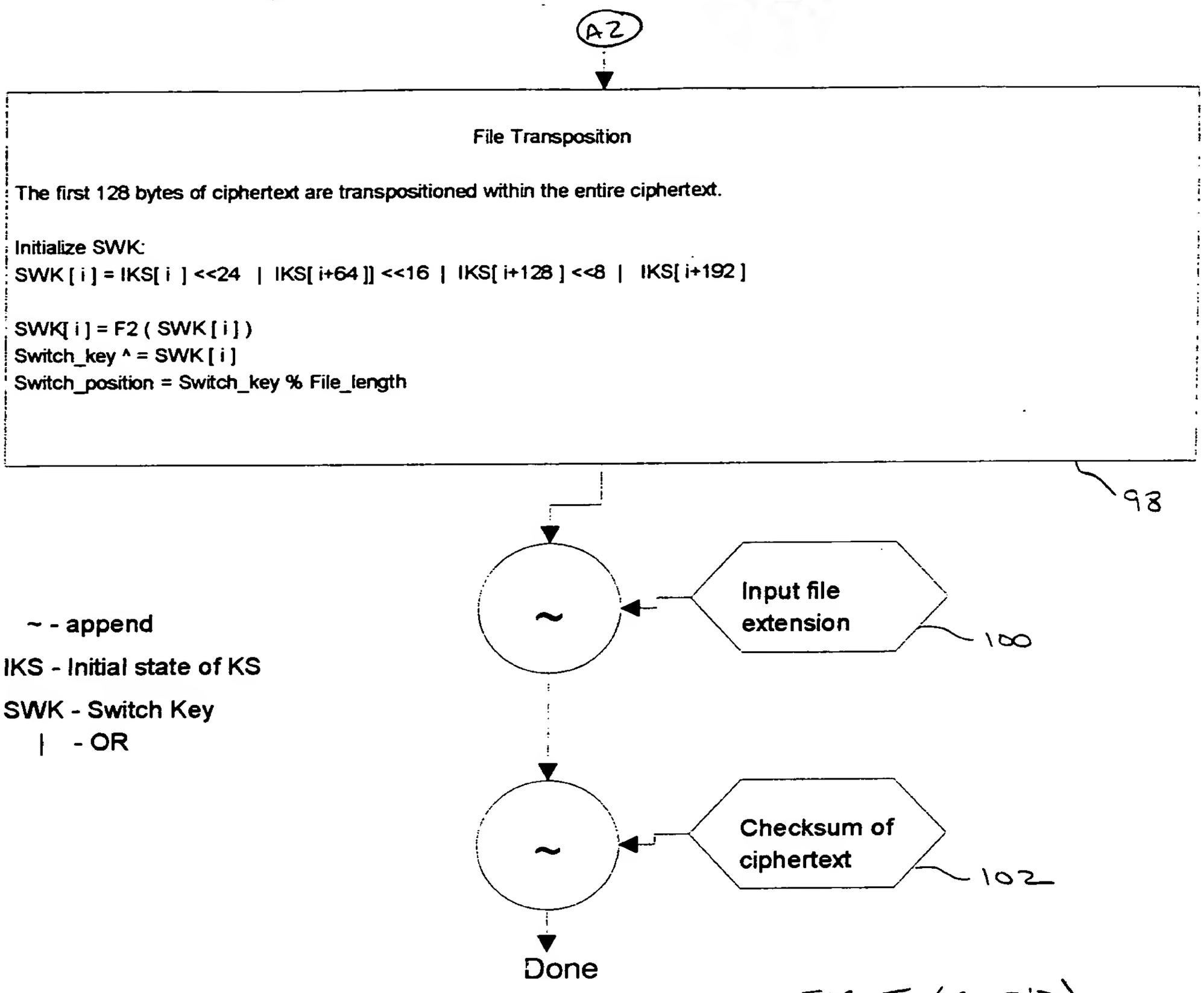


FIG. 5 (CONT'D)

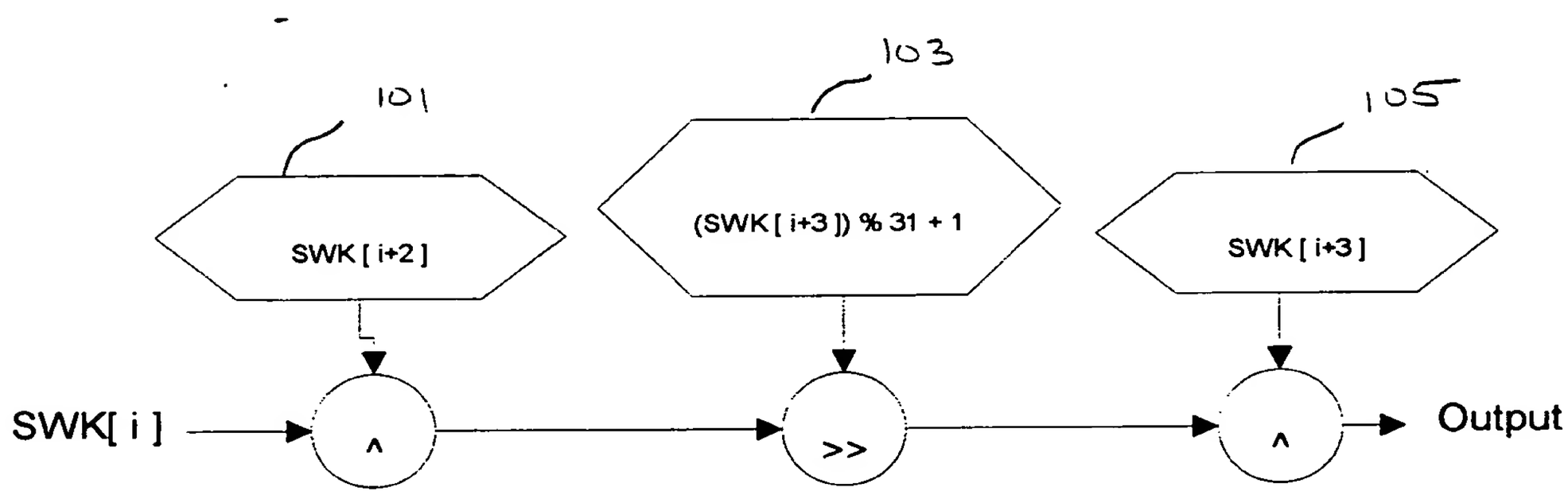


FIG. 6

K3 Modification

K3[i] + = (K2[K2[K3[i]]] % 255) + 113 + K2[i]

K1 Modification

K1_SEED ^ = K1[K1 [K3 [i]]]

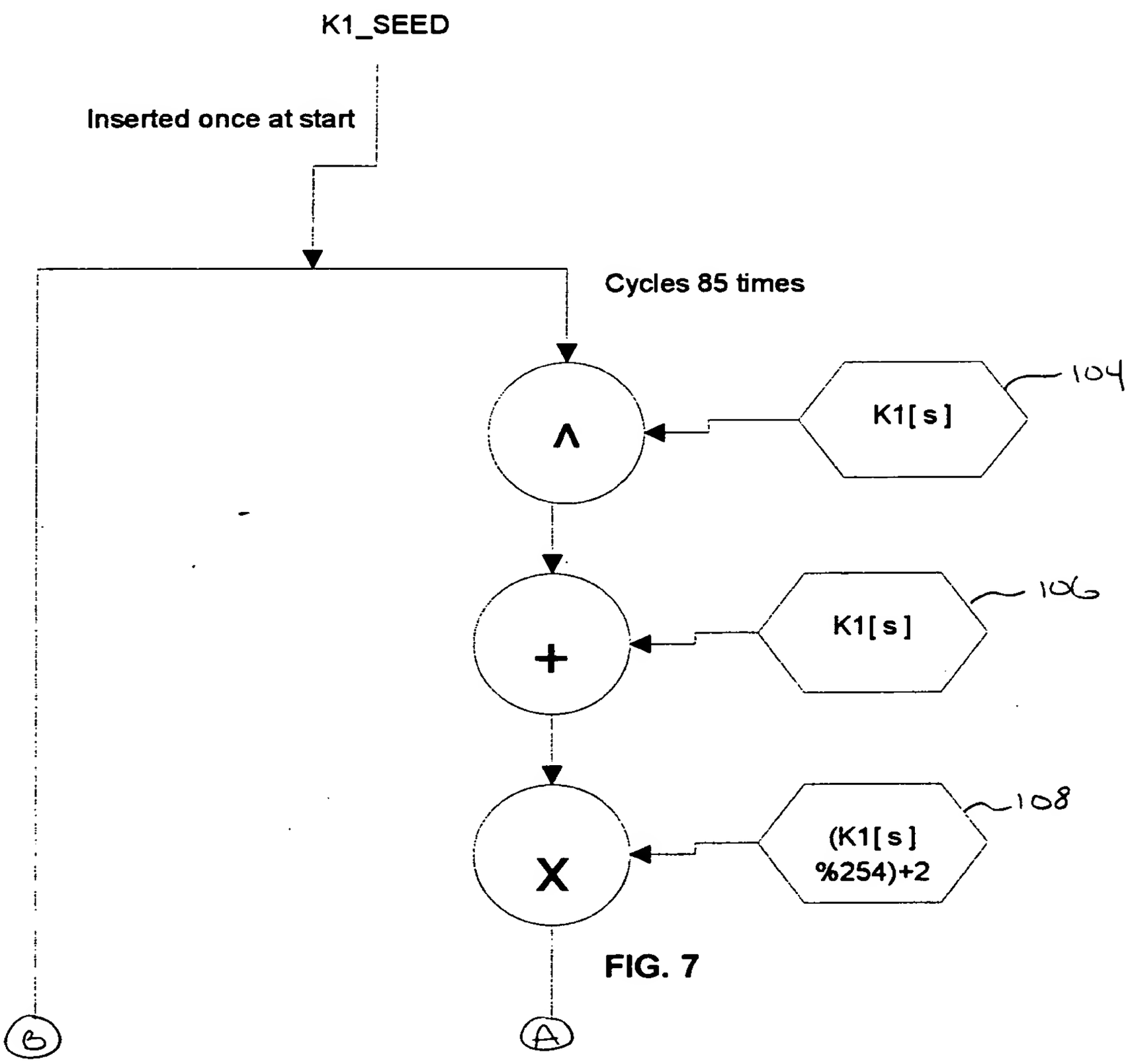


FIG. 7

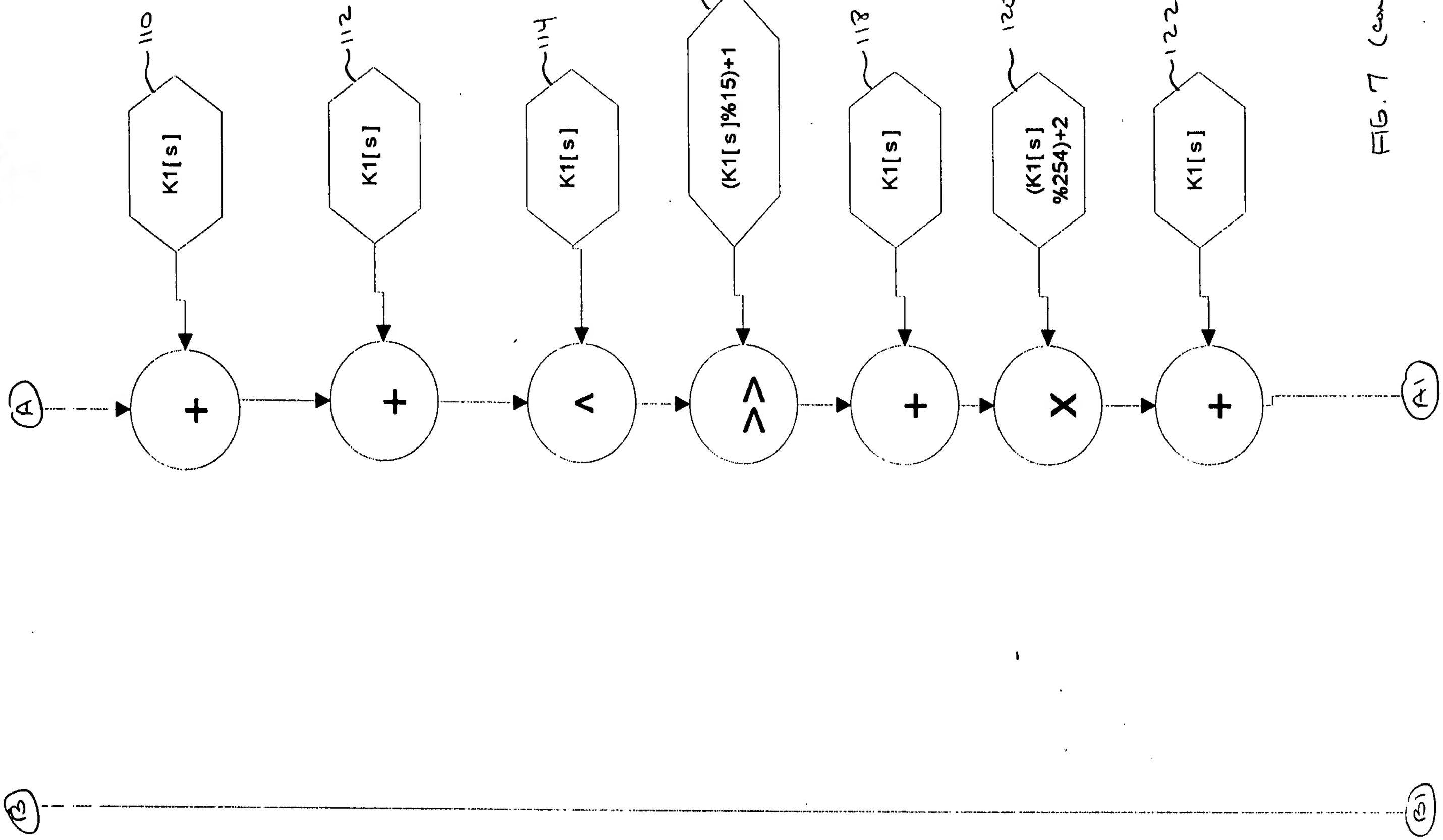

110
K1[s]
112
K1[s]
114
K1[s]
116
(K1[s]%15)+1
118
K1[s]
120
(K1[s]
%254)+2
122
K1[s]
A
+
+
<
^
^
+
×
+
A'
B
B'

FIG. 7 (cont'd)

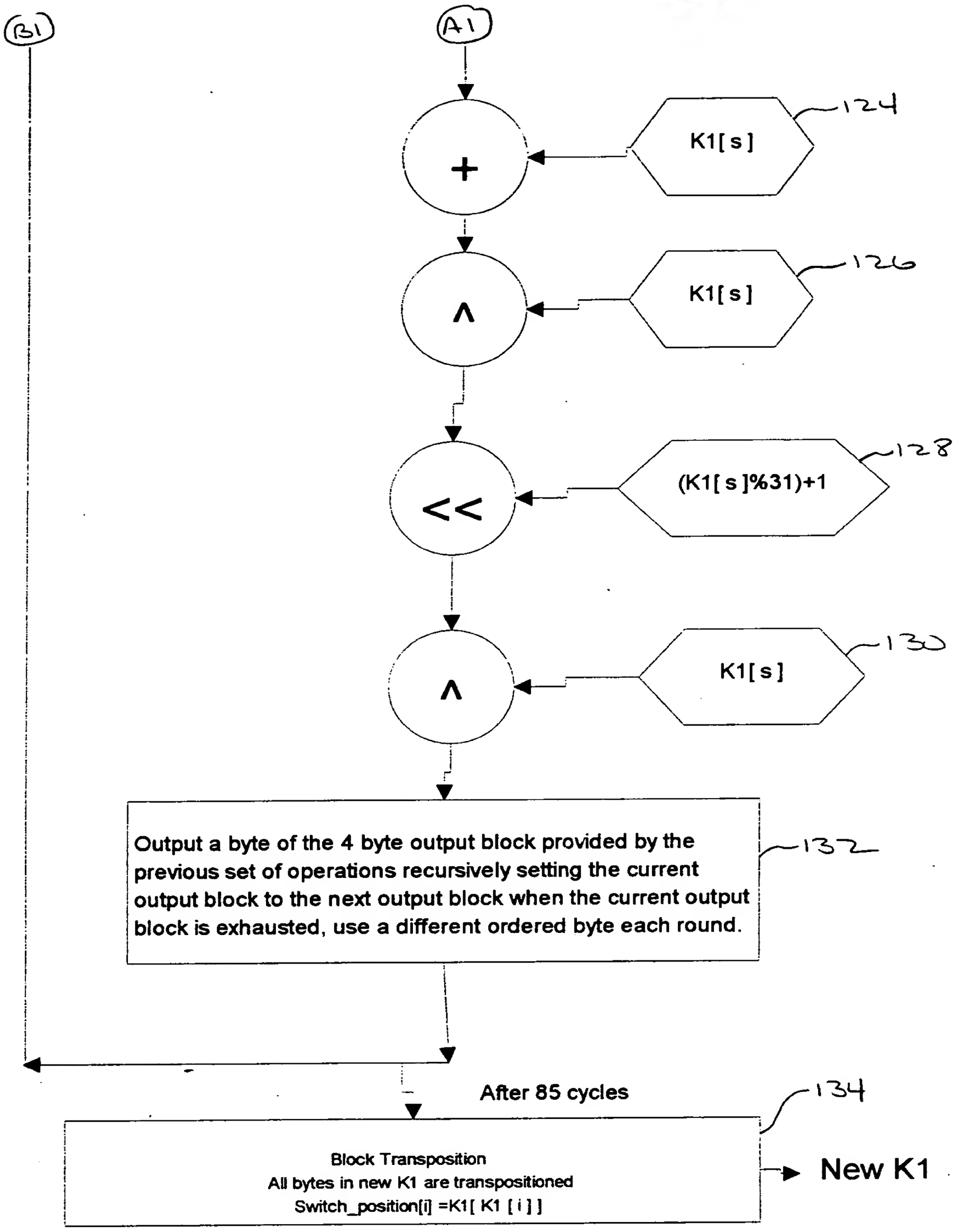

B1
A1
+
K1[s]
124
^
K1[s]
126
<<
(K1[s]%31)+1
128
^
K1[s]
130
Output a byte of the 4 byte output block provided by the previous set of operations recursively setting the current output block to the next output block when the current output block is exhausted, use a different ordered byte each round.
132
After 85 cycles
Block Transposition
All bytes in new K1 are transpositioned
Switch_position[i] =K1[K1 [i]]
134
New K1

FIG. 7 (CONT'D)

K2 Modification

K2_SEED + = (K3[K3 [#] % 64] % 253) + 3

K2_SEED ^ = K2 [K2 [K3 [K2[K3 [s % 64] + K2[#] % 192] % 64]]]

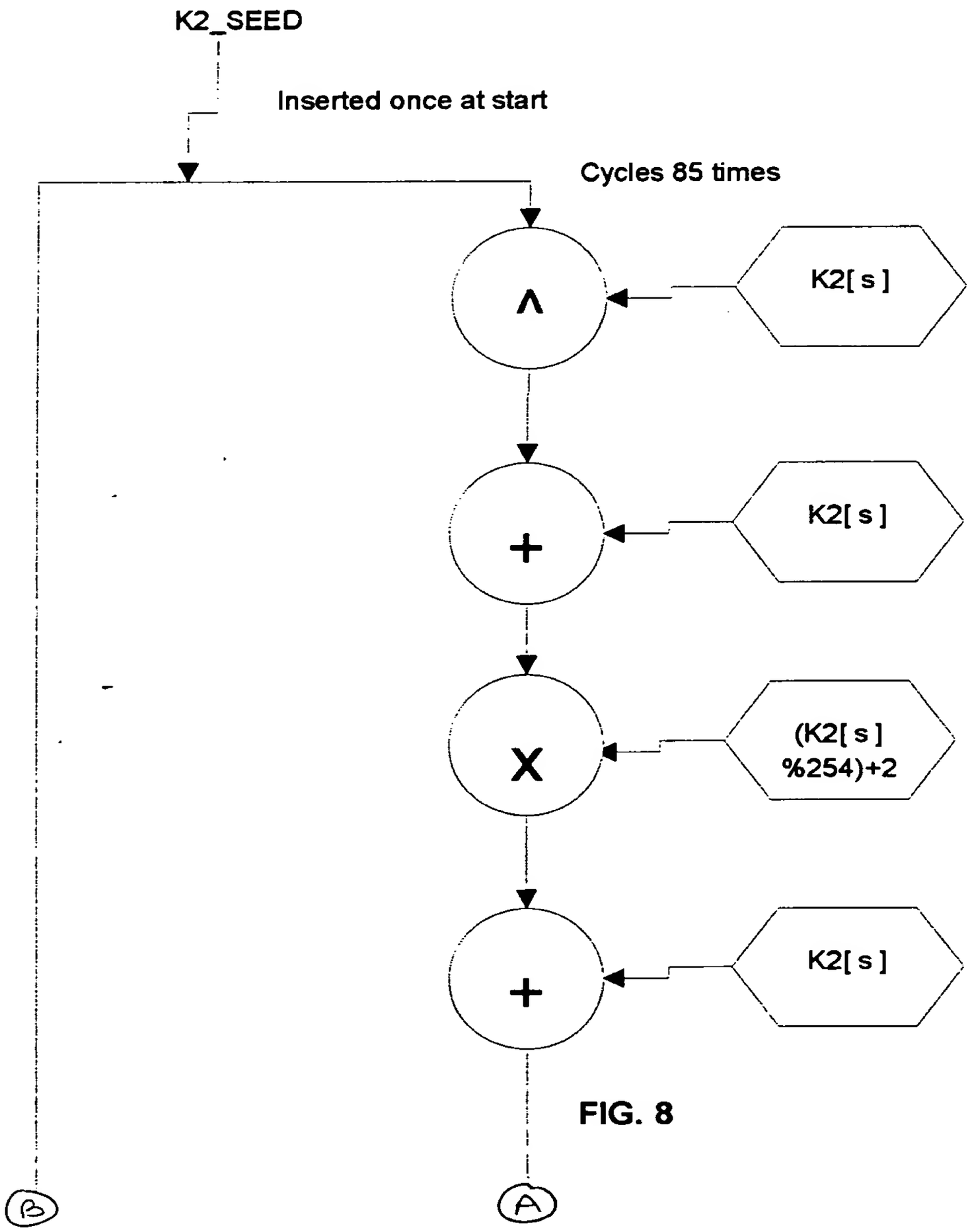


FIG. 8

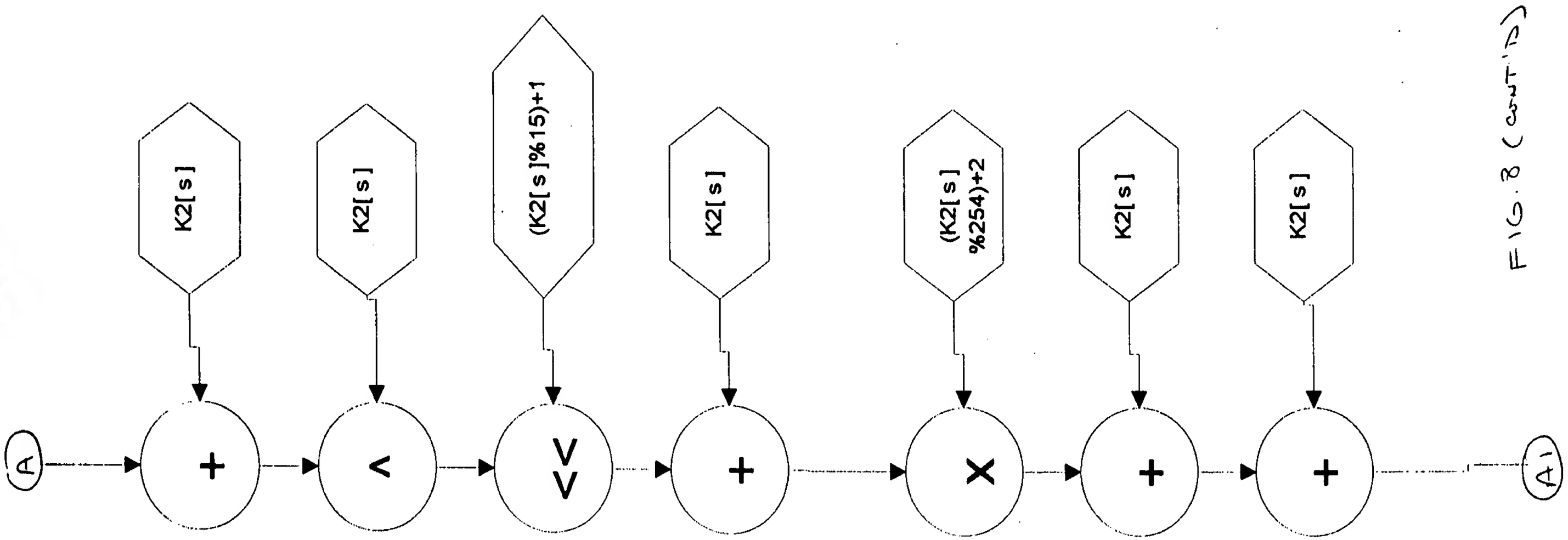


FIG. 8 (CONT'D)

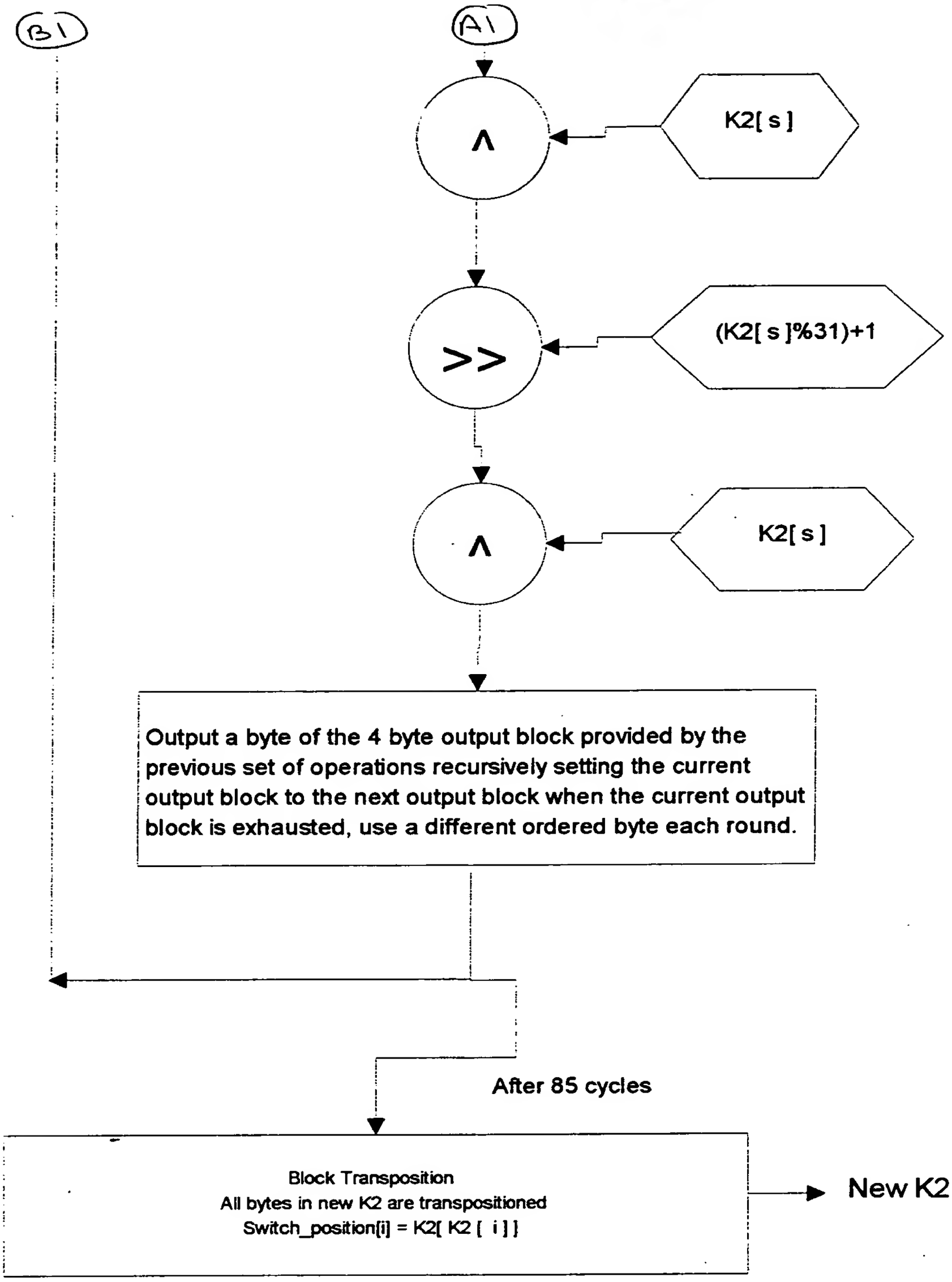


FIG. 8 (CONT'D)

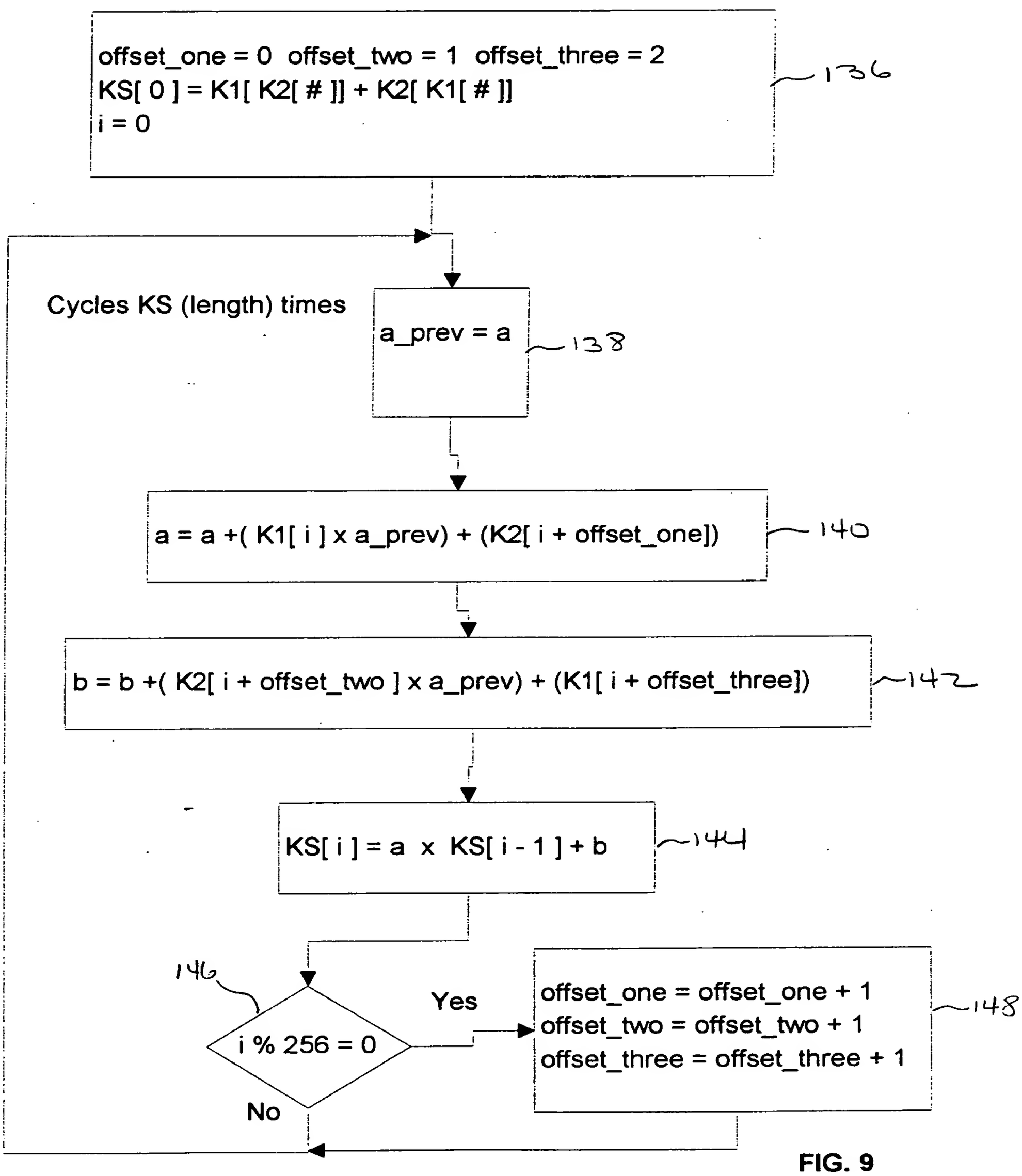

offset_one = 0 offset_two = 1 offset_three = 2
KS[0] = K1[K2[#]] + K2[K1[#]]
i = 0
136
Cycles KS (length) times
a_prev = a
138
a = a +(K1[i] x a_prev) + (K2[i + offset_one])
140
b = b +(K2[i + offset_two] x a_prev) + (K1[i + offset_three])
142
KS[i] = a x KS[i - 1] + b
144
146
i % 256 = 0
Yes
No
offset_one = offset_one + 1
offset_two = offset_two + 1
offset_three = offset_three + 1
148

FIG. 9

150

```
H1(v1,v2,v3,v4,v5,v6,v7) = ( v1 ^ v2 & v3 | ~v4 & v5 ^ v6 ^ v7)
H2(v1,v2,v3,v4,v5,v6,v7) = ( v1 & ~v2 ^ v3 ^ v4 ^ v5 & v6 | v7)
H3(v1,v2,v3,v4,v5,v6,v7) = ( v1 ^ v2 | v3 ^ v4 | ~v5 ^ v6 ^ ~v7)
H4(v1,v2,v3,v4,v5,v6,v7) = (~v1 ^ v2 & v3 | v4 ^ v5 ^ ~v6 & v7)
H5(v1,v2,v3,v4,v5,v6,v7) = ( v1 & v2 ^ v3 ^ ~v4 | v5 & v6 ^ v7)
H6(v1,v2,v3,v4,v5,v6,v7) = ( v1 ^ v2 & ~v3 | v4 & v5 | v6 ^ v7)
H7(v1,v2,v3,v4,v5,v6,v7) = ( v1 ^ v2 | v3 & v4 ^ v5 ^ ~v6 & v7)
H8(v1,v2,v3,v4,v5,v6,v7) = (~v1 & v2 ^ v3 | v4 ^ v5 & v6 ^ v7)

HASH(hnum,output,v1,v2,v3,v4,v5,v6,v7,key) = (output +=
key+hnum(v1,v2,v3,v4,v5,v6,v7)

HASH_FOR_KEY(hnum,result,output,v1,v2,v3,v4,v5,v6,v7,key) =
(result+=output+key+hnum(v1,v2,v3,v4,v5,v6,v7))
```

FIG. 10

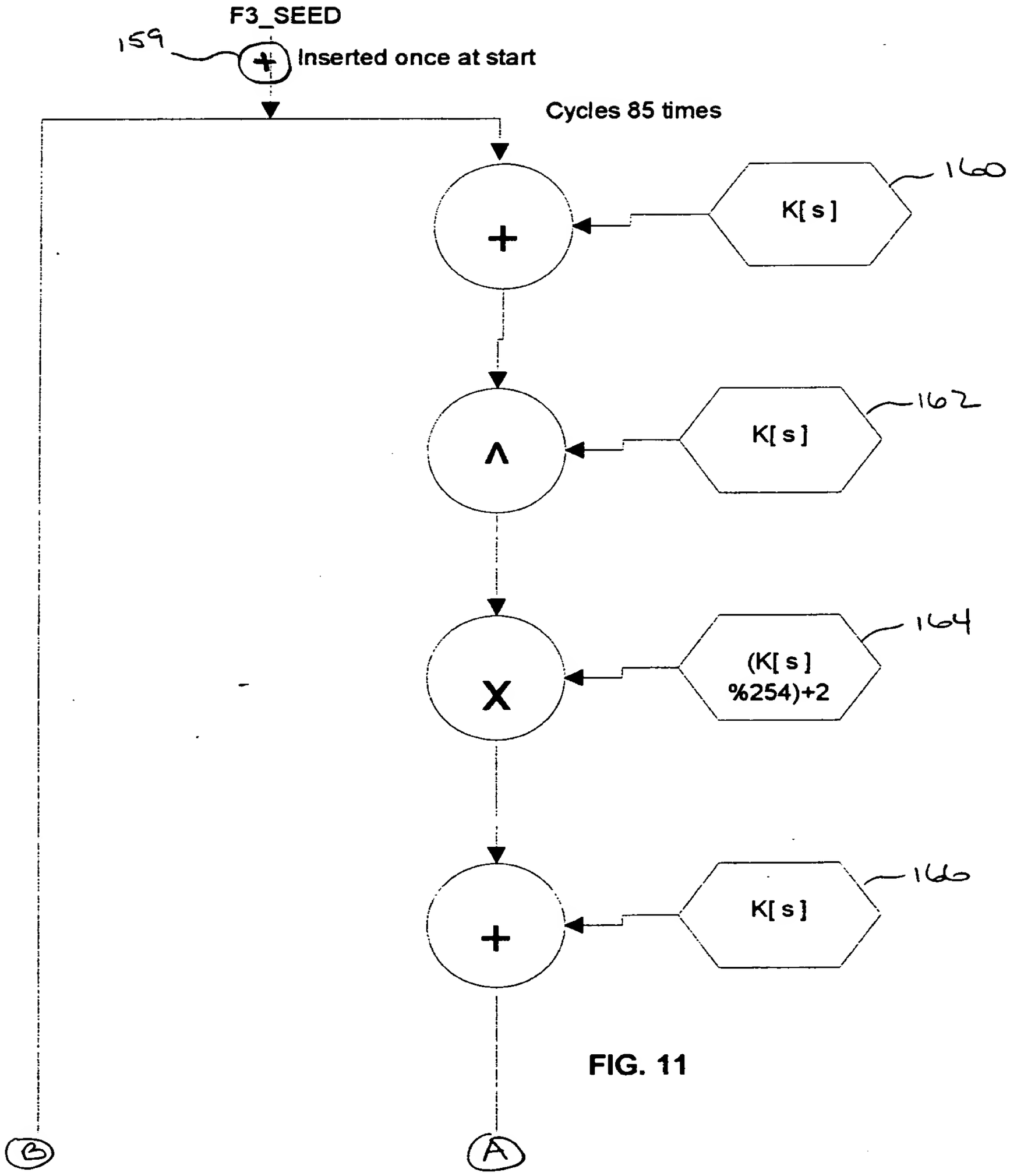

F3 SEED
159
Inserted once at start
Cycles 85 times
+
K[s]
160
∧
K[s]
162
X
(K[s]
%254)+2
164
+
K[s]
166
B
A

FIG. 11

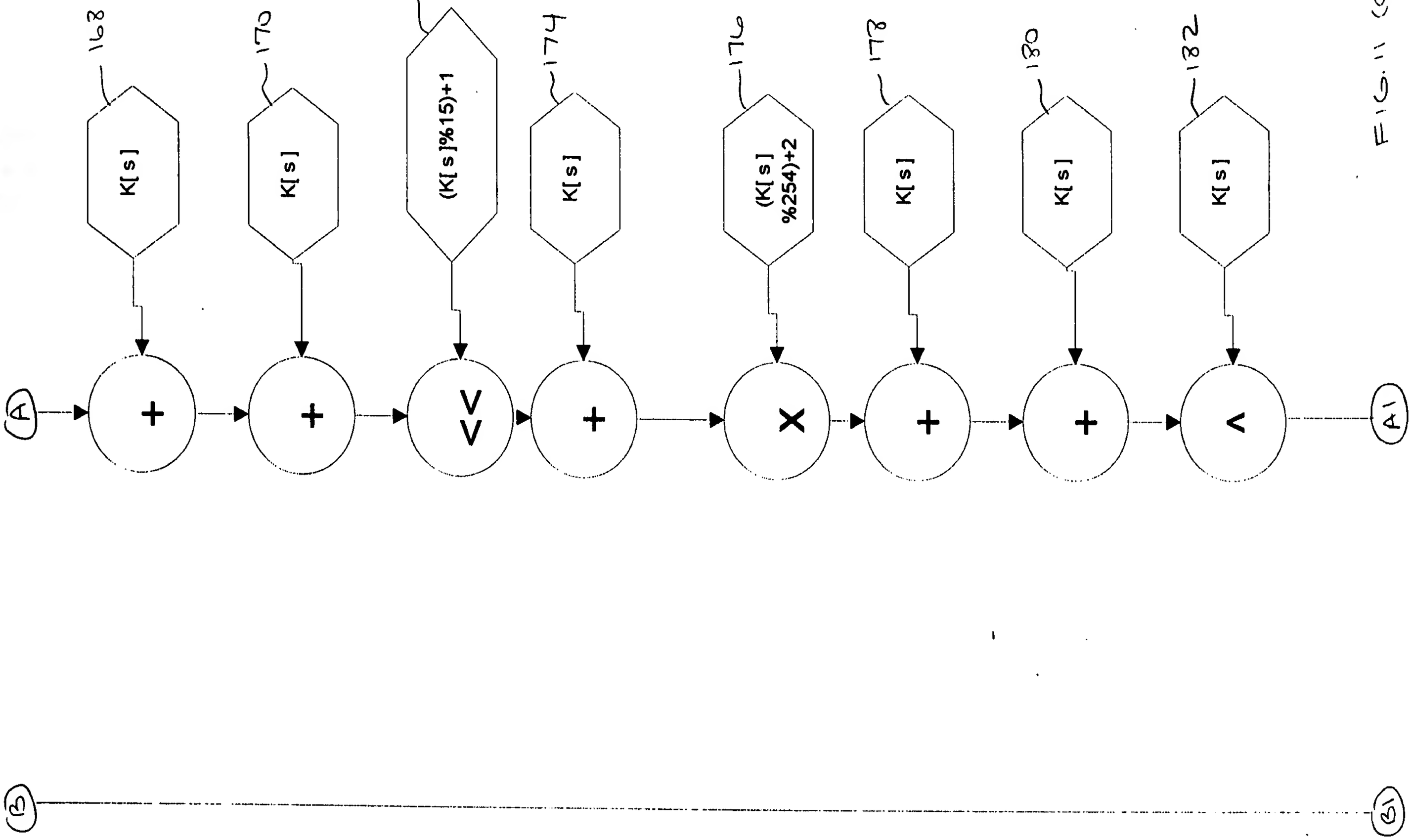
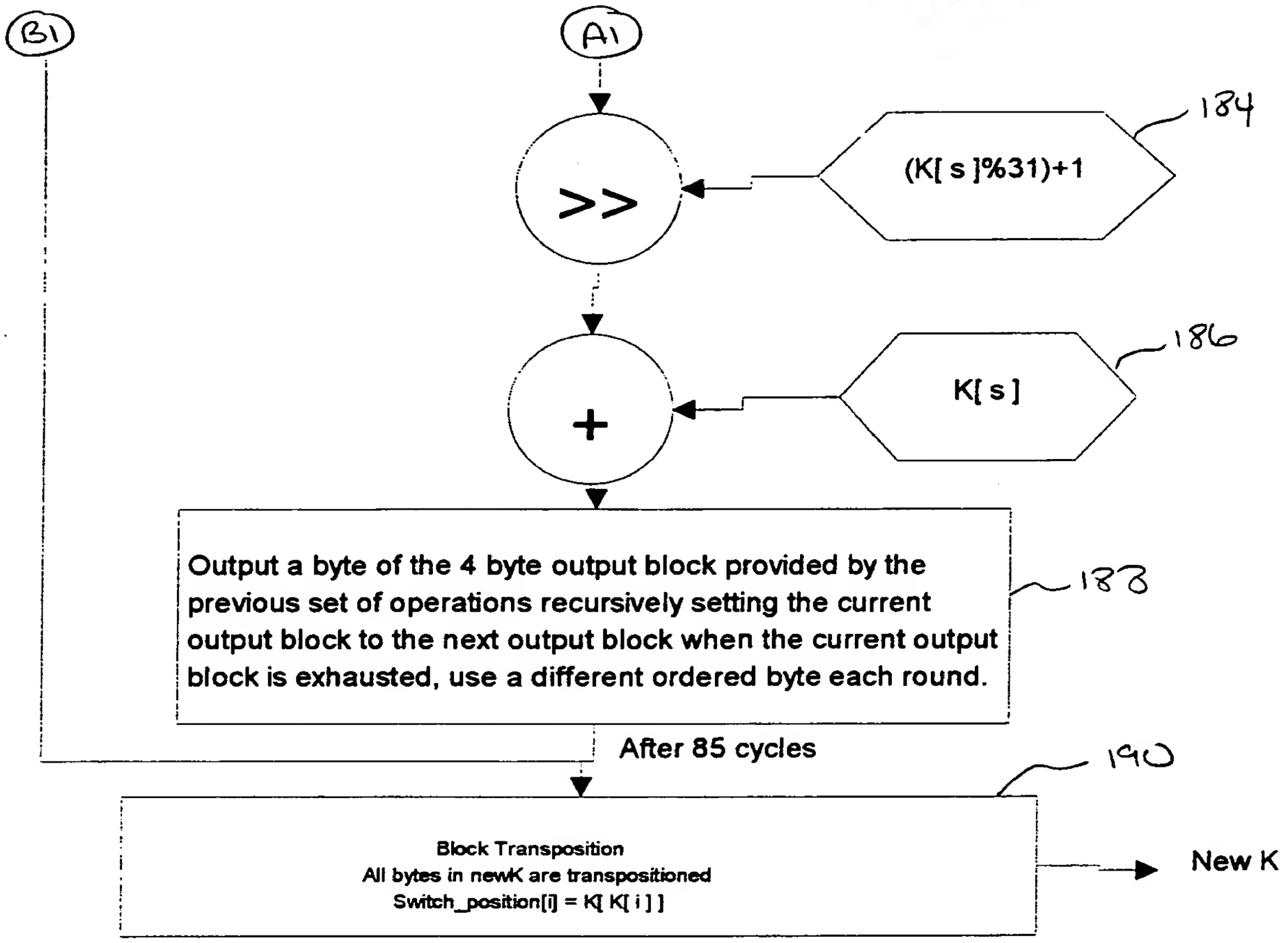


FIG. 11 (CONT'D)



input_block = 256 bytes of input, read from the input file.

var0 = 32 bit pointer assigned to input_block;
var1 = 32 bit pointer assigned to (input_block+32);
var2 = 32 bit pointer assigned to (input_block+64);
var3 = 32 bit pointer assigned to (input_block+96);
var4 = 32 bit pointer assigned to (input_block+128);
var5 = 32 bit pointer assigned to (input_block+160);
var6 = 32 bit pointer assigned to (input_block+192);
var7 = 32 bit pointer assigned to (input_block+224);

- static numbers
index++ - running index
rep - running index

for(rep=0;rep<8;rep++){ } - Code within "{ }" will be executed eight times and rep will be incremented after each loop.

FIG. 11 (CONT'D)

```
F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[#],K[#],K[#],K[#],K[o%64],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)

F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[#],K[#],K[#],K[#],K[o%64],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[o%64],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)

F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[o%64],K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[#],K[#],K[#],K[o%64],K[#],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)
```

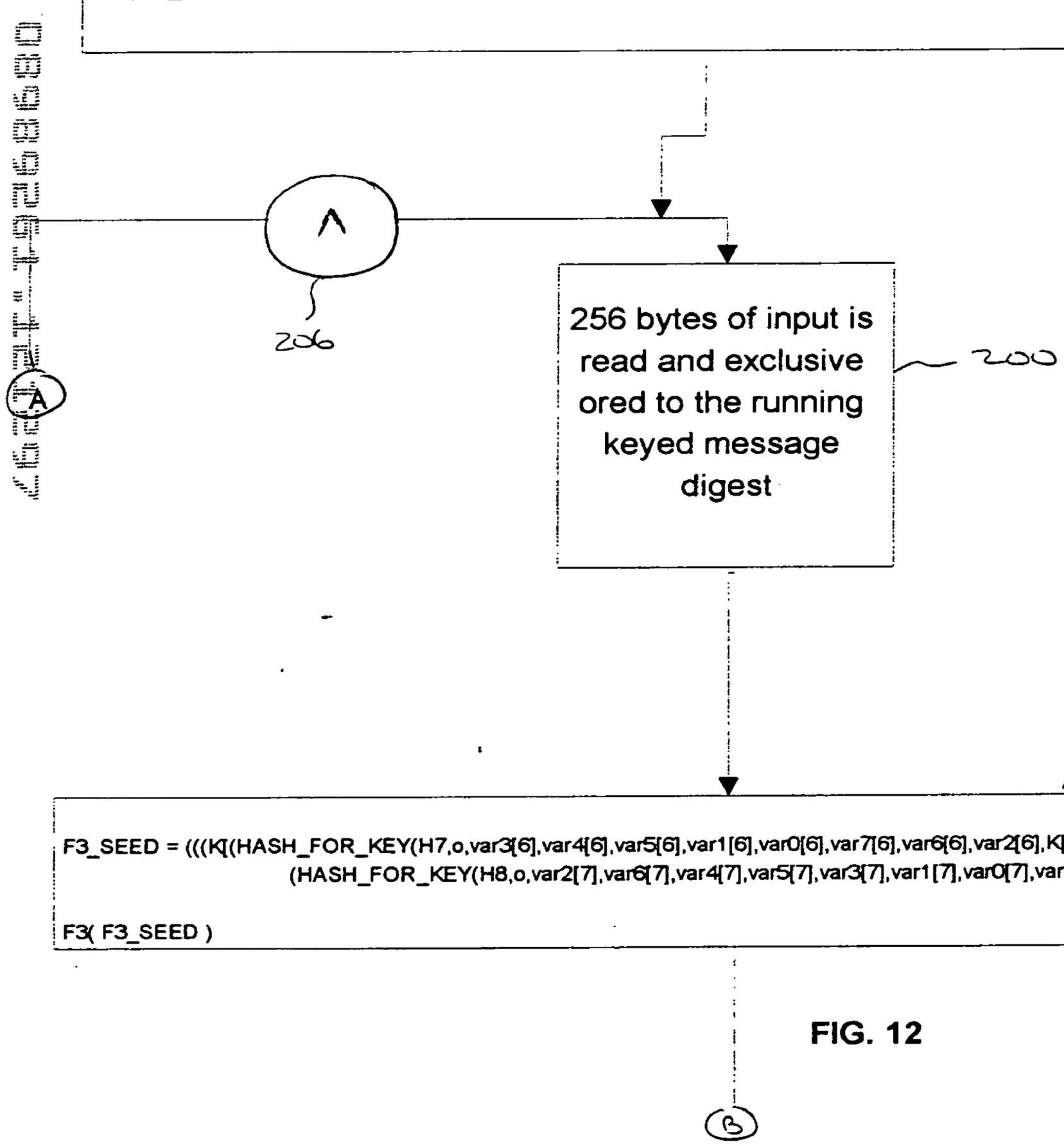


FIG. 12

(B)

204

```
for(rep=0;rep<8;rep++)
{
HASH(H1,var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],K[rep]);
HASH(H1,var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],K[rep+8]);
HASH(H1,var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],K[rep+16]);
HASH(H1,var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],K[rep+24]);
HASH(H1,var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],K[rep+32]);
HASH(H1,var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],K[rep+40]);
HASH(H1,var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],K[rep+48]);
HASH(H1,var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H6,o,var3[6],var4[6],var5[6],var1[6],var0[6],var7[6],var6[6],var2[6],K[(index++%64)]))%64])>>
                    (HASH_FOR_KEY(H5,o,var2[7],var6[7],var4[7],var5[7],var3[7],var1[7],var0[7],var7[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

204

```
for(rep=0;rep<8;rep++)
{
HASH(H2,var0[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var1[rep],K[rep]);
HASH(H2,var1[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var2[rep],K[rep+8]);
HASH(H2,var2[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var3[rep],K[rep+16]);
HASH(H2,var3[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var4[rep],K[rep+24]);
HASH(H2,var4[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var5[rep],K[rep+32]);
HASH(H2,var5[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var6[rep],K[rep+40]);
HASH(H2,var6[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var7[rep],K[rep+48]);
HASH(H2,var7[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var0[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H4,o,var3[6],var4[6],var5[6],var1[6],var0[6],var7[6],var6[6],var2[6],K[(index++%64)]))%64])>>
                    (HASH_FOR_KEY(H7,o,var2[7],var6[7],var4[7],var5[7],var3[7],var1[7],var0[7],var7[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

204

```
for(rep=0;rep<8;rep++)
{
HASH(H3,var0[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var1[rep],var2[rep],K[rep]);
HASH(H3,var1[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var2[rep],var3[rep],K[rep+8]);
HASH(H3,var2[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var3[rep],var4[rep],K[rep+16]);
HASH(H3,var3[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var4[rep],var5[rep],K[rep+24]);
HASH(H3,var4[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var5[rep],var6[rep],K[rep+32]);
HASH(H3,var5[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var6[rep],var7[rep],K[rep+40]);
HASH(H3,var6[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var7[rep],var0[rep],K[rep+48]);
HASH(H3,var7[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var0[rep],var1[rep],K[rep+56]);
}
```

(B1)

FIG. 12 (CONT'D)

B1

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H2,o,var3[6],var4[6],var5[6],var1[6],var0[6],var7[6],var6[6],var2[6],K[(index++%64)]))%64])>>
                        (HASH_FOR_KEY(H6,o,var2[7],var6[7],var4[7],var5[7],var3[7],var1[7],var0[7],var7[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

204

```
for(rep=0;rep<8;rep++)
{
HASH(H4,var0[rep],var4[rep],var5[rep],var6[rep],var7[rep],var1[rep],var2[rep],var3[rep],K[rep]);
HASH(H4,var1[rep],var5[rep],var6[rep],var7[rep],var0[rep],var2[rep],var3[rep],var4[rep],K[rep+8]);
HASH(H4,var2[rep],var6[rep],var7[rep],var0[rep],var1[rep],var3[rep],var4[rep],var5[rep],K[rep+16]);
HASH(H4,var3[rep],var7[rep],var0[rep],var1[rep],var2[rep],var4[rep],var5[rep],var6[rep],K[rep+24]);
HASH(H4,var4[rep],var0[rep],var1[rep],var2[rep],var3[rep],var5[rep],var6[rep],var7[rep],K[rep+32]);
HASH(H4,var5[rep],var1[rep],var2[rep],var3[rep],var4[rep],var6[rep],var7[rep],var0[rep],K[rep+40]);
HASH(H4,var6[rep],var2[rep],var3[rep],var4[rep],var5[rep],var7[rep],var0[rep],var1[rep],K[rep+48]);
HASH(H4,var7[rep],var3[rep],var4[rep],var5[rep],var6[rep],var0[rep],var1[rep],var2[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H7,o,var7[5],var5[5],var3[5],var1[5],var6[5],var2[5],var4[5],var0[5],K[(index++%64)]))%64])>>
                        (HASH_FOR_KEY(H1,o,var4[6],var1[6],var6[6],var3[6],var7[6],var0[6],var2[6],var5[6],K[(index++%64)]))%25));
F3( F3_SEED )
```

204

```
for(rep=0;rep<8;rep++)
{
HASH(H5,var0[rep],var5[rep],var6[rep],var7[rep],var1[rep],var2[rep],var3[rep],var4[rep],K[rep]);
HASH(H5,var1[rep],var6[rep],var7[rep],var0[rep],var2[rep],var3[rep],var4[rep],var5[rep],K[rep+8]);
HASH(H5,var2[rep],var7[rep],var0[rep],var1[rep],var3[rep],var4[rep],var5[rep],var6[rep],K[rep+16]);
HASH(H5,var3[rep],var0[rep],var1[rep],var2[rep],var4[rep],var5[rep],var6[rep],var7[rep],K[rep+24]);
HASH(H5,var4[rep],var1[rep],var2[rep],var3[rep],var5[rep],var6[rep],var7[rep],var0[rep],K[rep+32]);
HASH(H5,var5[rep],var2[rep],var3[rep],var4[rep],var6[rep],var7[rep],var0[rep],var1[rep],K[rep+40]);
HASH(H5,var6[rep],var3[rep],var4[rep],var5[rep],var7[rep],var0[rep],var1[rep],var2[rep],K[rep+48]);
HASH(H5,var7[rep],var4[rep],var5[rep],var6[rep],var0[rep],var1[rep],var2[rep],var3[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H5,o,var7[6],var5[6],var3[6],var1[6],var6[6],var2[6],var4[6],var0[6],K[(index++%64)]))%64])>>
                        (HASH_FOR_KEY(H3,o,var4[7],var1[7],var6[7],var3[7],var7[7],var0[7],var2[7],var5[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

B2

FIG. 12 (CONT'D)

B2

204

```
for(rep=0;rep<8;rep++)
{
HASH(H6,var0[rep],var6[rep],var7[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],K[rep]);
HASH(H6,var1[rep],var7[rep],var0[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],K[rep+8]);
HASH(H6,var2[rep],var0[rep],var1[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],K[rep+16]);
HASH(H6,var3[rep],var1[rep],var2[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],K[rep+24]);
HASH(H6,var4[rep],var2[rep],var3[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],K[rep+32]);
HASH(H6,var5[rep],var3[rep],var4[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],K[rep+40]);
HASH(H6,var6[rep],var4[rep],var5[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],K[rep+48]);
HASH(H6,var7[rep],var5[rep],var6[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H6,o,var7[6],var5[6],var3[6],var1[6],var6[6],var2[6],var4[6],var6[6],K[(index++%64)]))%64])>>
                    (HASH_FOR_KEY(H8,o,var4[7],var7[7],var6[7],var3[7],var7[7],var0[7],var2[7],var5[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

```
for(rep=0;rep<8;rep++)
{
HASH(H7,var0[rep],var7[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],K[rep]);
HASH(H7,var1[rep],var0[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],K[rep+8]);
HASH(H7,var2[rep],var1[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],K[rep+16]);
HASH(H7,var3[rep],var2[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],K[rep+24]);
HASH(H7,var4[rep],var3[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],K[rep+32]);
HASH(H7,var5[rep],var4[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],K[rep+40]);
HASH(H7,var6[rep],var5[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],K[rep+48]);
HASH(H7,var7[rep],var6[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],K[rep+56]);
}
```

205

```
F3_SEED = (((K[(HASH_FOR_KEY(H3,o,var3[6],var4[6],var5[6],var1[6],var0[6],var7[6],var6[6],var2[6],K[(index++%64)]))%64])>>
                    (HASH_FOR_KEY(H4,o,var2[7],var6[7],var4[7],var5[7],var3[7],var1[7],var0[7],var7[7],K[(index++%64)]))%25));
F3( F3_SEED )
```

204

```
for(rep=0;rep<8;rep++)
{
HASH(H8,var0[rep],var7[rep],var2[rep],var3[rep],var4[rep],var5[rep],var6[rep],var1[rep],K[rep]);
HASH(H8,var1[rep],var0[rep],var3[rep],var4[rep],var5[rep],var6[rep],var7[rep],var2[rep],K[rep+8]);
HASH(H8,var2[rep],var1[rep],var4[rep],var5[rep],var6[rep],var7[rep],var0[rep],var3[rep],K[rep+16]);
HASH(H8,var3[rep],var2[rep],var5[rep],var6[rep],var7[rep],var0[rep],var1[rep],var4[rep],K[rep+24]);
HASH(H8,var4[rep],var3[rep],var6[rep],var7[rep],var0[rep],var1[rep],var2[rep],var5[rep],K[rep+32]);
HASH(H8,var5[rep],var4[rep],var7[rep],var0[rep],var1[rep],var2[rep],var3[rep],var6[rep],K[rep+40]);
HASH(H8,var6[rep],var5[rep],var0[rep],var1[rep],var2[rep],var3[rep],var4[rep],var7[rep],K[rep+48]);
HASH(H8,var7[rep],var6[rep],var1[rep],var2[rep],var3[rep],var4[rep],var5[rep],var0[rep],K[rep+56]);
}
```

B3

FIG. 12 (CONT'D)

B3

A

i - running index

NO

At end of input file ?

204

YES

F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[#],K[#],K[#],K[#],K[o%64],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)

F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[#],K[#],K[#],K[o%64],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[o%64],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)

F3_SEED = (((K[(HASH_FOR_KEY(H1,o,K[o%64],K[#],K[#],K[#],K[#],K[#],K[#],K[#],K[(s)]))%64])>>
(HASH_FOR_KEY(H2,o,K[#],K[#],K[#],K[#],K[o%64],K[#],K[#],K[#],K[(s)]))%25));

F3(F3_SEED)

210

Block Transposition

All bytes in keyed message digest block are transpositioned

Switch_position[i] = K[i]

B4

FIG. 12 (CONT'D)

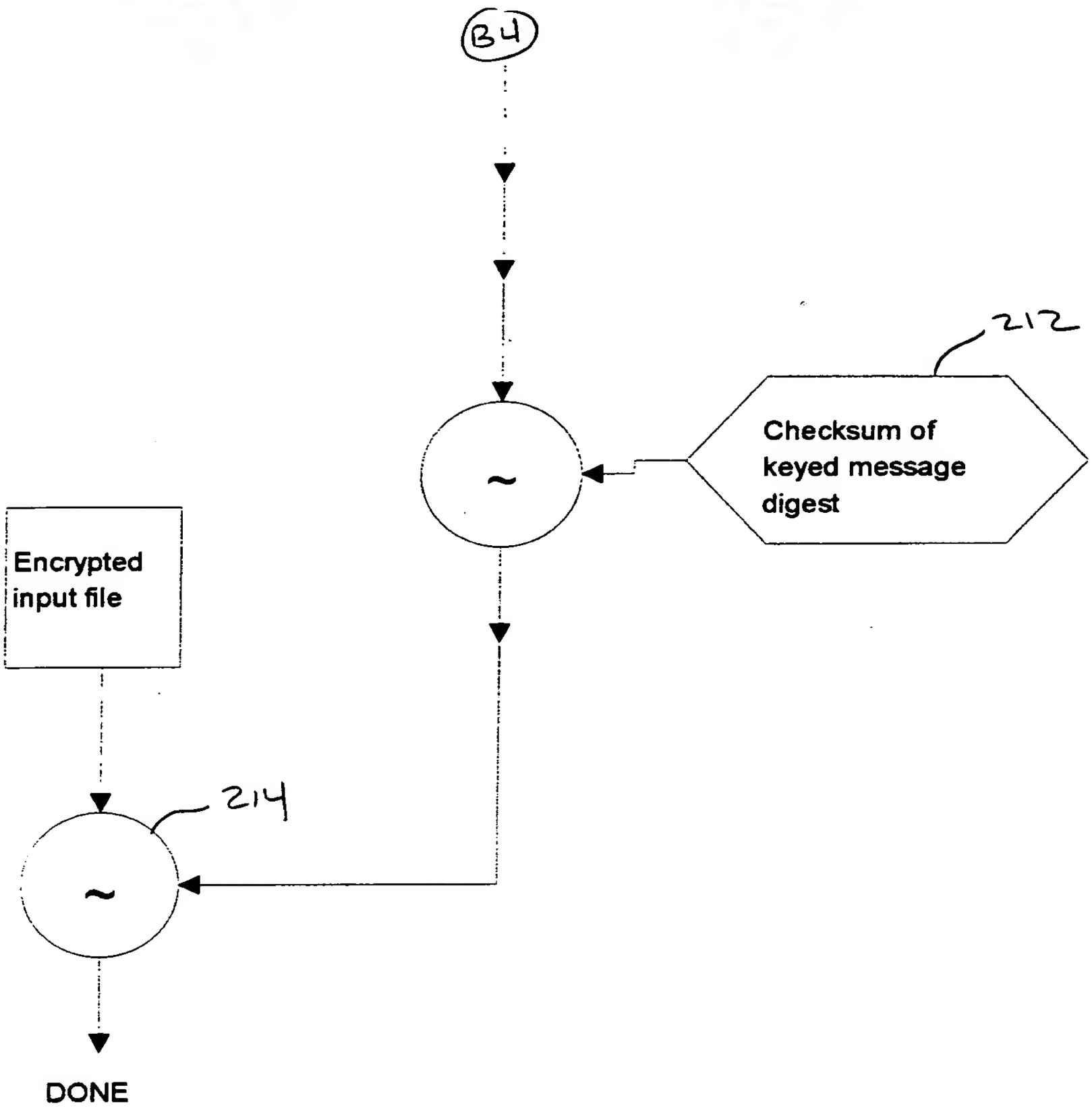


FIG. 12 (CONT'D)